Notice of Allowability	Application No.	Applicant(s)	
	10/047,462	CALCAGNO ET AL.	
	Examiner	Art Unit	
	Thomas E. Shortledge	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Remarks, filed 08/31/2006*.

2. ☒ The allowed claim(s) is/are *1, 7-29, and 34-44*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

ABUL AZAD
PRIMARY EXAMINER
11/11/06

DETAILED ACTION

1. This communication is in response to Remarks, filed 08/31/2006.

2. Claims 1, 7-29, and 34-44 are pending. Claims 1, 21, 29 and 39 are independent. Claims 1, 7, 29 and 34 are amended. Claims 2-6 and 30-33 are cancelled.

3. The objections to claims 6-19 and 33-38 have been withdrawn in accordance with the applicant's amendments.

4. The 35 U.S.C. 102(b) rejections of claims 1-4 and 29-31 have been withdrawn in accordance with the applicant's amendments.

5. The 35 U.S.C. 103(a) rejections of clams 5, 20 and 32 have been withdrawn in accordance with the applicant's amendments.

Allowable Subject Matter

6. Claims 1, 7-29, and 34-44 allowed.

7. The following is an examiner's statement of reasons for allowance:

Claim 1 recites a method of interpreting a linguistic representation of a textual input comprising: receiving a linguistic discourse representation structure (DRS) as the linguistic representation of the textual input, receiving an entity-and-relation model of a

non-linguistic domain, and generating a semantic discourse representation structure (SemDRS) in terms of the entity-and-relation model and based on evidence derived from the linguistic DRS, by receiving a set of semantic segments mapping rules, each rule having a first side that matches DRS segments of a specified form and a second side that specifies at least a partial SemDRS; wherein applying the set of semantic mapping rules to the linguistic DRS, comprises: identifying applicable semantic mapping rules as rules having first sides that mach any segments of the linguistic DRS, generating patterns associated with the linguistic DRS, the patterns including a plurality of partial SemDRSs corresponding to the second sides of the applicable semantic rules; and combining some of the patterns, consistently with the entity-and-relation model, into a single combined solution pattern; wherein the linguistic DRS has elements arranged in a box structure and wherein generating a SemDRS further comprises arranging the solution pattern in a box structure based on the box structure of the linguistic DRS by restoring the box structure of the linguistic DRS onto the solution pattern to obtain the SemDRS. The closest prior art of record (Dahlgren et al. (5,794,050)) teaches translating an input sentence discourse representation into a semantic discourse representation using semantic lexicon mapping, even and entity rules and pattern creation. However, Dahlgren et al. do not teach nor fairly suggest wherein arranging the solution pattern in a box structure comprises restoring the box structure of the linguistic UDRS onto the solution pattern to obtain the SemDRS, nor combining some of the patterns, generating at least one initial search state including a set of the patterns, wherein the set of patterns is formed such that the patterns in the set account for every

element in the linguistic DRS box structure and such that none of the elements in the linguistic DRS box structure is accounted for by more than one pattern in the set of patterns.

Claim 21 recites a method of generating a semantic interpretation of a textual input represented by a linguistic discourse representation structure (DRS), comprising the steps of applying semantic mapping rules to the linguistic DRS, mapping portions of the linguistic DRS to semantic interpretation fragments. Further, claim 21 recites applying string-based rewrite rules to tokens in the textual input, mapping tokens in the textual input to semantic interpretation fragments, and generating a plurality of ranked semantic discourse representation structures (SemDRSs) based on the semantic interpretation fragments, ranking SemDRSs generated from interpretations spawned by applying the semantic mapping rules higher than SemDRSs based on semantic interpretation fragments spawned by applying the string-based rewrite rules. The closest prior art of record (Dahlgren et al.) teaches translating an input sentence discourse representation into a semantic discourse representation using semantic lexicon mapping, even and entity rules and pattern creation. However, Dahlgren et al. do not teach nor fairly suggest applying string-based rewrite rules to tokens in the textual input, mapping tokens in the textual input to semantic interpretation fragments, nor ranking SemDRSs generated from interpretations spawned by applying the semantic mapping rules higher than SemDRSs based on semantic interpretation fragments spawned by applying the string-based rewrite rules.

Claim 29 recites a semantic analysis system, comprising: a controller configured to receive a linguistic a linguistic discourse representation structure (DRS) as a linguistic representation of a textural input, an entity-and-relation model of non-linguistic domain, and a set of semantic mapping rules the linguistic DRS having elements arranged in a box structure and wherein the controller is configured to generate the SemDRS by arranging the solution pattern in a box structure based on the box structure of the linguistic DRS; an interpretation fragment generator, coupled to the controller, configured to apply the semantic mapping rules to the linguistic DRS to generate semantic interpretation fragments, wherein each of the semantic mapping rules has a first side that matches DRS segments of a specified form and a second side that specifies at least a partial SemDRS, and an interpretation assembly component, coupled to the controller, receiving the semantic interpretation fragments and generating at least one solution pattern from the semantic interpretation fragments by combining some of the interpretation fragments, consistently with the entity-and-relation model, into a single combined solution pattern, the controller generating a semantic discourse representation structure (SemDRS) from the solution patterns consistent wit the entity-and-relation model; and wherein the controller comprises a search state generator configured to generate at least one initial search state including a set of interpretation fragments, wherein the set of interpretation fragments is formed such that the interpretation fragments in the set account for every element in the linguistic DRS box structure and such that none of the elements in the linguistic DRS box structure is

accounted for by more than one interpretation fragment. The closest prior art of record (Dahlgren et al.) teaches translating an input sentence discourse representation into a semantic discourse representation using semantic lexicon mapping, event and entity rules and pattern creation. However, Dahlgren et al. do not teach nor fairly suggest the controller comprises a search state generator configured to generate at least one initial search state including a set of interpretation fragments, wherein the set of interpretation fragments is formed such that the interpretation fragments in the set account for every element in the linguistic DRS box structure and such that none of the elements in the linguistic DRS box structure is accounted for by more than one interpretation fragment.

Claim 39 recites a control component in a semantic analysis system configured to maintain a plurality of data structures for semantically interpreting a linguistic discourse representation structure (DRS) that is a linguistic representation of a textual input having tokens, the data structures comprising the components of a pattern list including a list of semantic patterns generated by applying semantic mapping rules to structural elements of the linguistic DRS, a pattern-to-DRS element mapping that maps patterns in the pattern list to DRS elements that spawned the patterns, a DRS element-to-token mapping that maps between the structural elements of the linguistic DRS and the tokens in the textual input that spawned the structural elements, and a pattern-to-token mapping between the patterns in the pattern list and tokens corresponding to the DRS elements used in generating the patterns. The closest prior art of record (Dahlgren et al.) teaches translating an input sentence discourse representation into a

semantic discourse representation using semantic lexicon mapping, event and entity rules and pattern creation. However, Dahlgren et al. do not teach nor fairly suggest a pattern-to-DRS element mapping that maps patterns in the pattern list to DRS elements that spawned the patterns, a DRS element-to-token mapping that maps between the structural elements of the linguistic DRS and the tokens in the textual input that spawned the structural elements, and a pattern-to-token mapping between the patterns in the pattern list and tokens corresponding to the DRS elements used in generating the patterns.

Claims 7-20, 22-28, 34-38 and 40-44 are also allowed since they depend from the above claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas E. Shortledge whose telephone number is (571)272-7612. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TS
11/07/06

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PRIMARY EXAMINER